

**Responsiveness Summary for Public Comments on the Engineering
Evaluation/Cost Analysis for the Terminal 117 Early Action Area, Lower
Duwamish Superfund Site Seattle, WA**

July 18, 2005

The purpose of this document is to summarize and respond to the public comments submitted on the Engineering Evaluation/Cost Analysis (EE/CA) for the Terminal 117 (T-117) Early Action Area (EAA) of the Lower Duwamish Waterway Superfund Site, Seattle, Washington. A removal action at the EAA is projected to be performed pursuant to an Administrative Order on Consent (AOC) issued by the U.S. Environmental Protection Agency (EPA) to the Port of Seattle (Port) and the City of Seattle (City).

The EE/CA for the T-117 EAA was made available for public review and comment from March 8th through April 7th 2005. Notice of this comment period was published in the *Seattle Times* on March 8th. The comment period was also announced in a bilingual English/Spanish flyer mailed to about 3,500 addresses in February 2005. Additionally, a Superfund fact sheet announcing the comment period and summarizing the cleanup alternatives proposed in the EE/CA was mailed to almost 900 addresses in March 2005. That fact sheet was translated into Spanish, and 400 copies of the translation were sent to distribution points in March. The flyer and the fact sheet were posted on EPA's website, which also announced the comment period.

An Administrative Record was prepared for this action and notice of availability of that record was published in the Superfund fact sheet. The Administrative Record is available at EPA. The *Seattle Times*, the flyer, and the fact sheet all announced the availability of the EE/CA at EPA, the Washington State Department of Ecology (Ecology), and the document repository near the site.

On March 15, 2005, EPA held a public meeting to provide information and take public comments on the EE/CA. Well over 100 people attended the meeting. EPA received over 100 comments, either verbally at the meeting or in writing, during the public comment period. EPA responded to the comments in the Responsiveness Summary included as an attachment.

Sources of comments included:

1. BJ Cummings, Coordinator, Duwamish River Cleanup Coalition, Seattle, WA
2. Marla Steinhoff, Coastal Resource Coordinator, National Oceanic and Atmospheric Administration
3. Gary Palcisko, Health Assessor, Washington State Department of Health
4. Dow Constantine, Councilmember, Metropolitan King County Council, District Eight

5. Richard Conlin, Transportation and Sustainability Chair, Seattle City Council; Jean Godden, Energy and Environmental Policy Committee Chair, Seattle City Council
6. Senator Margarita Prentice, Representative Zack Hudgins and Representative Bob Hasegawa, Washington State Legislature
7. Ron Sims, King County Executive, King County
8. Transcript of the public meeting held on March 15, 2005

The EPA has required the Port and the City to revise the EE/CA in response to public comment and resubmit the EE/CA to the agencies for final approval. Significant issues raised by the public that will be incorporated into the revised EE/CA include:

- 1) Additional sampling in the North Bank and drainage ditch for use in the design process and design documents.
- 2) Commitment to work with the affected community on transportation and site management plans.
- 3) Additional information on the evaluation of alternatives in the EE/CA.
- 4) Commitment to work with trustees on natural resource issues during design and construction.
- 5) Additional groundwater monitoring wells and soil information to evaluate further the nature and extent and potential recontamination.

Below is a summary of the comments received that are consolidated to specific topics with the appropriate EPA responses following.

Community Impacts

1. Comment: The public voiced concerns about impacts to the community during the cleanup. Some consideration of community impacts should be made in the EE/CA (or at some stage of the process) so that health concerns are community incorporated into work plans. For instance, will it be necessary to monitor air or fugitive dust for contaminants of concern during the removal? If not, what is the basis for not requiring air monitoring? Should the public expect odors from the dredging, and are these odors of health consequence? Will equipment moved off site be decontaminated before it is moved through the neighborhood? How will the increased truck traffic impact children's safety in neighborhoods, etc?

Response: *Community impacts during cleanup will be addressed during design, particularly with contractor work plans. Information from these work plans will be shared with the community.*

EPA believes that best management practices (BMPs) can be readily implemented to minimize any impacts to the community. Community impacts during cleanup will be addressed during design and more specifically in the contractor's workplans. The Design Analysis Report will include a section providing an overview of measures being taken to minimize community impacts, and the rationale for including or not including specific measures such as air monitoring. The design will include specifications for transportation and disposal that contractors must follow, and these specifications are part of the procurement process. Certain requirements will be spelled out in the specifications, such as:

- allowable hours of operation,*
- the need to decontaminate equipment,*
- the need to control dust and prevent any spillage during transport,*
- any restrictions on haul routes, and*
- the required content of the contractor's clean up/removal action workplan.*

EPA will work very hard to ensure that limited impacts are felt to the neighborhood. Information from BMPs and vehicle and equipment decontamination plans will be shared with the public prior to EPA approval and the start of the removal actions at an appropriate public forum (e.g., neighborhood association meetings) where members of the community can voice their concerns and comments. EPA will ensure that the public concerns during these forums will be given serious consideration prior to EPA approval of these plans.

EPA has generally found that PCB exposure to humans via the air at other PCB sediment remediation sites across the country does not exceed concentrations of concern. At New Bedford Harbor, sediment PCB concentrations were approximately 300 fold higher than those at T-117 and air monitoring during remediation did not show significant PCB air exposure risks. Given that sites with similar or higher PCB concentrations have not shown significant air impacts during remedial actions, EPA feels that it is unlikely that PCB air exposure during T-117 removal actions would be of concern.

2. Comment: The EE/CA leaves out critical pieces of information and fails to fully characterize or describe site conditions and certain elements of the cleanup plan. It is not acceptable to postpone information or decisions that are critical to the success of the plan and should be subject to formal public review to future "design" or contractor-dependent documents.

Response: *EPA does not agree that critical pieces of the cleanup have been left out of the EE/CA. It would not be feasible for the EE/CA to include detailed information on future plans (e.g., disposal transportation and safety plan, long-term monitoring plan, dredging and excavation best management practices) particularly when designs have not been reviewed or approved by the EPA. However, the revised EE/CA will present the general elements of future plans. The EPA, the Port and the City will provide opportunities for a community forum*

(e.g., neighborhood association meetings) for both public discussion of critical pieces of information during the design and construction phase of the project.

3. Comment: People who are involved in this project need to be aware that there are people still living here and it's important that citizen involvement be encouraged throughout the cleanup.

Response: *EPA is aware that people live in houses and in an apartment complex in the South Park neighborhood surrounding Terminal 117 and also on boats at the South Park Marina to the north of the site. EPA understands that residents may be affected by cleanup activities, such as truck traffic and will encourage citizen involvement throughout the cleanup. Community involvement activities will include providing information through fact sheets and the EPA web site, meeting with community members, and working with the Port, the City, and the community advisory group for the Lower Duwamish Waterway Superfund Site to provide information and respond to public concerns.*

Source Control

4. Comment: EPA and Ecology must be prepared to explain how the timing of source control actions and cleanup activities will be closely coordinated to minimize future recontamination as the cleanup is completed.

Response: *EPA and Ecology are part of an interagency work group called the Lower Duwamish Waterway Source Control Work Group which is focused on controlling and managing sources of contamination to the entire Lower Duwamish Superfund site. Ecology worked with the LDW Source Control Work Group to finalize a Source Control Action Plan (SCAP) for T-117 which will be published July 2005. This SCAP and the EE/CA are coordinated on the issues of source control. EPA and Ecology believe ongoing sources of sediment contamination are controlled to the point where the potential for recontaminating the early action is low, as explained below; however, some data gaps still exist. The SCAP for T-117 identifies these data and information gaps, as well as the additional source control tasks necessary to reduce possible future recontamination potential (e.g., excavating soils contaminated from past sources). The necessary work includes defining the nature and extent of contamination in the northern part of T-117 EAA and of PCB contamination in the drainage ditch at the southern end of the property, along with a better determination of whether groundwater is a source of PAHs or PCBs in nearby sediments. The EE/CA acknowledges these data and information gaps and the SCAP explains how they are being addressed.*

6. Comment: The source of contamination must be found and contained. The potential for recontamination needs to be addressed and the design documents should identify how those PCB concentrations that remain in place will be managed over the long term.

Response: It is critical to manage and control sources to the T-117 sediments in order to ensure long term effectiveness of the removal action. This is the basis of investigations and actions taken to date by EPA, Ecology, the Port and the City on T-117 itself as well as at other properties which have the potential to affect early action sediments. The SCAP for T-117 provides detail about the source control investigations, study, and work performed to-date at T-117 and the surrounding area. As noted above, the SCAP also identifies necessary source control tasks for the future, before the early action occurs and after. To date the pathways considered as potential, ongoing sources of sediment contamination include:

*the bank,
seeps at the bank and intertidal area,
groundwater, and
surface and storm water runoff.*

There is general agreement that the bank along the shoreline of T-117 is very contaminated and would be an ongoing source of PCB and PAH contamination to the waterway if left in place. Removing the bank as part of this cleanup also controls a primary source of recontamination potential. The past manufacturing operations, and particularly the use of PCB-contaminated oil from Seattle City Light as fuel in the 1970s, are important historic sources of PCB, and to a lesser extent PAH, contamination to sediments; however, these operations have ceased. Groundwater was recently sampled again and will be monitored after the cleanup. These data will be used with existing groundwater and seep data to determine more conclusively whether groundwater is an ongoing source or pathway of contamination to the sediments. Ongoing sources of contamination to surface and storm water are controlled. The source control actions that have reduced the recontamination potential for sediments include recent road and yard cleanups in the neighborhood, paving of exposed soils to prevent erosion at the top of the T-117 bank, tenant inspections, and maintenance of the storm water system. The SCAP for T-117 provides detail on these and other source control actions.

Historic, subsurface soil contamination that may remain on T-117 does not have an imminent recontamination potential unless it is excavated and then tracked by vehicles, or otherwise runs into the river. Any contamination that may remain sub-surface will be managed in two ways to prevent sediment recontamination. First, the early action cleanup design will be developed to provide a sufficient barrier between the contamination and the environment. Second, Institutional Controls (i.e., land use restrictions) will prevent future development activities or upland cleanups from recontaminating sediments. In addition, EPA will require groundwater monitoring at T-117 after the cleanup to evaluate and inform future groundwater decisions.

7. Comment: EPA must consider the probability that there are multiple, possibly ongoing sources to T-117, including Basin Oil and buried drums along the shoreline.

Response: *As described above and explained in the SCAP for T-117, EPA and Ecology are considering more sources to sediments than T-117 alone. Basin Oil is no longer operating and the facility is in the process of demolition. As an ongoing source via surface pathways, all runoff from the Basin Oil property is collected by the improved drainage and collection system installed in October 2004. Sampled runoff from Basin Oil does not indicate it is an ongoing source of sediment contamination. With respect to subsurface contamination at the former Basin Oil facility, the owner will soon conduct a site assessment. Assessment results will be considered along with existing information to determine any need for additional controls.*

Drums buried in the bank of T-117 and along the T-117 shoreline are being removed along with contaminated soils and will therefore no longer be potential sources to sediments, as discussed above.

8. Comment: The number and placement of groundwater wells is inadequate to make the determination that groundwater is not a source to the river sediments. Additional seep sampling should be conducted to resolve whether fines (very small particles) were entrained at the point of sampling and not farther inland. Also, groundwater to the north of the previous removal action, where surface soils are most consistently contaminated, has not been sampled to determine whether groundwater transport is a contaminant migration pathway to the estuary. Light non aqueous phase liquid (LNAPL) testing using an electronic oil-water interface probe should be done again during high water table conditions, when trapped oils will be released as the pore-spaces are re-flooded with water.

Also, the area and depth to which significant PCB contamination in soils occurs is inadequately described along the northern bank, so that the degree of contamination in the soils that will be exposed during construction and that will remain underneath and behind the intertidal cap is unknown. The EE/CA also suggests that the pavement boundary is level with the boundary of the former upland Superfund cleanup. This may not be the case. The proposed cleanup boundary in the northwestern portion of the property would cleave through an area of known high-level PCBs (~1,000 mg/kg-OC), exposing high levels of PCBs to the environment immediately adjacent to the proposed cap, and leaving the inner portion in place. Upland boundary questions that remain unresolved include the appropriate boundary of the cleanup required to remove contamination in the south ditch, and the extent of upland removal (including areas under pavement) required within the northern portion of the T-117 property and in the neighboring marina.

Response: *EPA agrees that more information is required with respect to groundwater characterization, and that there is insufficient characterization in the northern bank. This summer (2005), two additional wells were installed along the shoreline for monitoring with the existing shoreline wells and an inland well. These samples were analyzed for other PAH contaminants, as well as for PCBs. During higher water table conditions an interface probe was used to detect the presence or absence of non aqueous phase liquid (NAPL) product. All wells have been monitored for NAPL. EPA-approved data from the pre-EE/CA sampling of shoreline groundwater wells for PCBs, PAHs and total suspended solids (TSS) do not indicate PCBs are moving with groundwater to T-117 sediments. If the results of the most recent sampling indicate the presence of PAH contaminants or PCBs that could be actively migrating to the river, then further seep sampling will be considered. The SCAP for T-117 also identifies the need for additional groundwater monitoring following the removal action.*

Design data, including soil sampling within the southern drainage ditch area and additional borings to the north of T-117 will be used to refine the design of the bank removal and cap. When necessary, the asphalt and the soils underneath will be removed.

9. Comment: The northern cleanup plan relies on a sheet pile wall to contain upland contamination and prevent erosion. However, water and oil or NAPL, both of which may transport PCB contaminated particles to the river, will flow around and under an impervious barrier such as sheet pile. This poses a risk of recontamination and needs to be clarified.

Response: *The sheet pile wall described in the plan is a proposal for a barrier in the northern area of T-117 that would prevent the bank cap from affecting the operating dredge depth of the adjacent marina. Should sheet pile be selected by EPA in the design phase of the clean up action, design performance criteria for the wall will be established. LNAPL has never been detected in the wells from earlier groundwater monitoring investigations or seeps in the vicinity. As mentioned in an earlier comment, further groundwater investigations along the northern portion of the EAA have been completed. These data will supplement the data previously generated (and reported in the EE/CA). These results will characterize the groundwater quality and further investigate the potential for other PAH contaminants along the inshore boundary of the removal area. The data obtained from this sampling will be used to refine the design of the bank removal and cap. The data will be presented in a technical memorandum issued after the final EE/CA. The data will be available to stakeholders and the public.*

10. Comment: If catch basin sampling shows renewed accumulation of PCBs despite the adjacent road dust and stormwater control work, the remaining sources will need to be identified and controlled.

Response: *EPA agrees. As part of recontamination monitoring, catch basins will be monitored and any sediments that accumulate will be sampled to determine whether further source identification and control will be needed.*

11. Comment: The source of PCBs already identified in seep samples has never been definitively determined; the EE/CA assumes that the source is surface entrainment of contaminated sediment, but offers no data on confirmatory investigations needed to make this determination, despite repeated requests by DRCC.

Response: *EPA does not agree that PCBs are being transported from upland sources to the waterway. (See response to Comment 8, above.) Groundwater quality has been recently evaluated based on data from newly installed groundwater wells on the north bank and renewed sampling of the existing wells. If PCBs are reaching the waterway via groundwater as identified through this sampling, the design will be modified to address this problem.*

12. Comment: Nothing in this document indicates that the partially excavated bank will be adequately protected from the rising tide and resulting extreme currents during construction. What will ensure protection of natural resources during this construction sequence? What responses will be made to ameliorate and mitigate a release of contaminants from the construction site to the estuary?

Response: *Additional information on bank slope protection during removal activities will be presented in the EE/CA; however, details on what that protection entails will be discussed in design documents. One method of protection of excavated slopes during high tide that could be selected by EPA would involve laying down fabric over exposed surfaces. During the design phase, EPA will also evaluate sequencing the bank excavations in sections, with each section excavated and capped before excavating additional areas. EPA will coordinate with natural resource trustees regarding minimizing the effects on the trust resources.*

13. Comment: Soils may need to be removed inland of the proposed western boundary. All PCBs above 12 mg/kg-OC (OC = organic carbon normalization to represent what sediments and associated contamination are available to benthic/mud dwelling organisms) in or adjacent to the riverbank should be removed with the cleanup. If the upland PCBs are left behind, this poses a recontamination risk. This EAA will require continued monitoring, and leaving residual PCBs in place will only increase the need to monitor the soils, sediments, water and biota.

Response: *Because this early action addresses cleanup of contaminated sediments, the focus of the soil removal in the upland and bank area is to remove potential sources of PCBs that may recontaminate the sediments. Removal of potential sources will include both soil and sediment removal as well as*

placement of controls to prevent remaining soils from migrating into the sediments. The planned excavation of upland soils and placement of an engineered cap will control the potential recontamination pathway from the uplands to the sediments. The final EPA approved cap will undergo engineering analyses in accordance with established EPA guidance to ensure the protectiveness of this remedy.

Monitoring activities will be required as part of any removal action to ensure long-term effectiveness of the remedy, particularly if hazardous substances remain on site. The specific monitoring requirements will be defined in a future long-term monitoring plan that is a required part of the design documents, and will be made available to the public prior to EPA approval.

Cap Design and Effectiveness

14. Comment: The design of the intertidal cap is inadequate to isolate contaminants, in the long term, that potentially remain in the upland. These remaining contaminants could then migrate through the intertidal cap by groundwater transport of PCBs in both dissolved and colloidal or particle form. PCBs also suspend in oil. Minimal capping should be required for any contaminants that remain on site.

The cap could also be improved as a barrier to contaminant transport by incorporating an impermeable barrier between the contaminated bank soils and the estuary, or by incorporating a stabilized hydrophilic or water soluble layer, such as activated carbon, to intercept, absorb, and sequester or isolate organic contaminants. An analysis demonstrating that the cap, as proposed, will be stable and able to resist erosion from anticipated floodwaters and boat wakes, in accordance with EPA guidance should be included.

Additionally, the proposed inter-tidal cap does not include any contaminant isolation layer, and neither the proposed design for the inter-tidal cap, nor the proposed design for the sub-tidal cap, includes analysis demonstrating that contaminants will remain sequestered or isolated in place beneath the cap and will not be released to the estuary in the future.

Finally, the proposal for the cap does not include analysis to demonstrate that the rise and fall of the tides will not create breaches in the surface dressing with subsequent destabilization of the structure, nor is there any mention of how the cap would sustain catastrophic events. Caps degrade over the long term, require long-term monitoring and may fail completely under irregular or catastrophic conditions. The scouring caused by flood cycles on the Duwamish, prop disturbance by large vessel traffic, and the EAA's location within a major seismic fault zone argue for minimizing the need for capping.

Response: *The cap design presented in the EE/CA is a planning-level description of proposed capping. A detailed cap design evaluation will be conducted as part*

of the post-EE/CA design efforts for this project. This evaluation will comply with EPA guidance (ref, US EPA, 1998). The cap design will factor in the results of further subsurface soil and groundwater sampling conducted in June 2005. EPA will approve the cap design when the final design documents are approved.

Evaluation of the chemical isolation effectiveness of the cap will be presented in detail in design as part of the cap design analysis. The impacts of tidal effects on chemical and physical isolation properties will be discussed as part of the cap analysis in a technical memorandum that will summarize the recently collected, June 2005, data.

The selected alternative provides a minimal extent of capping for contaminant containment while requiring removal of as much soil and sediment as feasible given geological constraints. Post-cleanup long-term monitoring will be required, to ensure the remedy remains effective, particularly if hazardous material is left on site. These activities will ensure that if recontamination of sediments does occur, it will be discovered and controlled as quickly as possible. The T-117 Source Control Action Plan evaluates other sources for the potential to recontaminate and the need for control of those sources.

15. Comment: A final design for this site will need a comprehensive review for habitat implications. As proposed, alternative two reduces water depths by three feet where water depths are currently between 0.0 and -5 ft MLLW and would potentially change substrate. Because of this impact to important shallow subtidal habitat, this alternative would probably require habitat mitigation.

Response: *EPA is planning to implement alternative 1, which includes maintaining the existing intertidal habitat elevations in the EAA. The revised EE/CA will state that habitat issues will be addressed in consultation with NOAA, the U.S. Fish and Wildlife Service and the Washington Department of Fish and Wildlife.*

16. Comment: Based on the known PCB concentrations in soils on the northern bank, a cap for this area should be designed to prevent the infiltration of precipitation or the release of leachate, in accordance with the Toxic Substances Control Act (TSCA).

Response: *PCB concentrations in northern bank soil are being further delineated. It is not anticipated that material requiring disposal in a TSCA landfill (> 50 ppm total PCBs) will be left in the bank following cleanup.*

17. Comment: A discussion of the upland/bank cap's long-term effectiveness in preventing upland contaminants from entering the LDW is necessary. Define "long-term" in number of years. How long is the cap expected to perform as designed assuming it is not disturbed? Provide reference to the basis for these estimates. The reader/public should feel confident that materials will not migrate through the barrier into the waterway in the future.

Response: *The upland/bank cap's design life will be evaluated in the design analysis report. The cap's performance will be monitored to assure protection of human health and the environment. EPA will assess the performance of the cap no less frequently than every five years, for as long as hazardous substances remain on site at concentrations of concern.*

18. Comment: Placing quarry spalls in direct contact with the geotextile fabric and then compressing the quarry spalls by driving heavy equipment over them is likely to tear and rip the geotextile fabric, reducing cap effectiveness as a barrier to soil release.

Response: *The physical stability of the filter fabric during compression of the quarry spalls will be evaluated in further detail in the design documents. EPA has not approved the placement of quarry spalls in direct contact with geotextile. Further evaluation of the effectiveness of the use of geotextile and quarry spalls will be done during the design process.*

Excavation/Dredging Effectiveness

19. Comment: Additional dredging technologies are practical and could be effective, in particular, an environmental bucket for mechanical dredging or hydraulic dredging. The cleanup should minimize dislodging contaminants into the water during the dredging, and this approach should be emphasized in the procurement process to obtain contractor services. A determination of the most protective dredging technology and a description of the most effective Best Management Practices (BMPs) should be included in the EE/CA. Also, alternative methods of removing soil from tidelands should be investigated, and the entire T-117 site needs to be tested to make sure that past cleanup efforts have proven effective.

Hydraulic dredging can also be modified by the type of dredge head, and as a general dredging technology, would be practical for several reasons. The volume of material to be dredged is not large, small hydraulic dredges are designed to work in the shallow water depths found at this EAA, and a package wastewater treatment plant has been installed nearby to remove PCBs from collected stormwater.

Response: *The removal action will be conducted using procedures that minimize resuspension of sediment. As described in the EE/CA, much of the contaminated material will be removed in the dry by working at low tides. Working "in the dry" is the best way to minimize resuspension. At lower elevations, the contaminated material will be removed by dredging. The design will include dredging specifications that contractors must follow, and these specifications are part of the procurement process. Certain requirements will be spelled out in the dredging specifications, such as (but not limited to):*

- *Requiring experienced and qualified operators*
- *Eliminating any “multiple bites” if the bucket is not filled*
- *Prohibiting any stockpiling of sediment on the bottom*
- *Prohibiting any dragging of the bucket to level the surface*
- *Specifying dredging procedures and sequencing requirements that minimize sloughing*
- *Specifying requirements for handling and dewatering the dredged material*
- *Specifying an overall requirement to meet water quality standards during the dredging*

The selected contractor will be required to write a removal action work plan that identifies the specific equipment and procedures to be used, and spells out additional operational controls to minimize resuspension. The operational controls can be modified during the work, based on results of water quality monitoring. Some possible operational controls include:

- *Using a different size bucket*
- *Using a closed “environmental bucket”*
- *Slowing the rate of bucket descent or ascent*
- *Allowing more time for the bucket to drain*
- *Rinsing the bucket*

EPA will closely monitor dredging operations and water quality sampling to ensure that the specifications and contractor work plans are followed and that resuspension of contaminants is minimized.

In addition to controlling resuspension of sediments, EPA will necessarily consider overall feasibility as well as minimizing adverse impacts to the surrounding community. As currently designed, approximately 5,500 cy of submerged sediments are anticipated to be dredged. Although the effectiveness of environmental buckets in reducing suspended sediments has not been clearly established, the possibility of using this type of bucket will be considered further in the design documents.

The implementability of hydraulic dredges in the area is poor. Although the volume of sediment is low, approximately 55,000 cy (assuming 10 percent solids) of sediment/water slurry would be generated to remove the contaminated sediments. Dewatering this volume becomes logistically challenging without an identified dewatering facility, which differs from the wastewater treatment facility mentioned in the comment. An additional concern is the probable presence of debris in the area, which limits the ability to hydraulically dredge.

EPA will provide requirements to protect water quality in a document called a Clean Water Act Section 401 Water Quality Certification (WQC). Once the contractor for the action has been selected, the contractor will be required to document Best Management Practices (BMPs) that show how the requirements of the WQC will be met. These details will be presented in the cleanup work plans.

Information from these BMPs will be shared with the public at an appropriate forum (e.g., neighborhood association meeting) prior to construction.

20. Comment: Hand-held hydraulic dredging, similar to that used recently on the Duwamish River by The Boeing Company, at its storm drain cleanup within the Norfolk Combined Sewer Overflow (CSO) Early Action Area, is recommended. While T-117 sediments would likely generate more water, there is sufficient space available at the T-117 upland property to employ a similar railcar dewatering system to that used by Boeing.

Response: *Like standard hydraulic dredging, hand-held hydraulic dredging would generate too much water to be considered an implementable option for T-117. Presence of debris would interfere with the effectiveness of using a hydraulic dredge. In addition, hand-held hydraulic dredging requires a significantly greater time to complete the removal than barge-based dredging. Assuming an operational dredging rate of 13 cy/hr, the removal of submerged T-117 sediment using a hand-held hydraulic dredge would take 423 hrs (52 days, assuming an 8-hour day), compared with the 45 hours (5 days assuming an 8-hour day) required for mechanical dredging. Hand-held hydraulic dredging would result in more days of equipment use and more truck traffic and noise within the surrounding community.*

Both the concentration of suspended solids and the duration of the dredging activity need to be considered when assessing environmental impacts of dredging technologies. While hydraulic dredging may potentially generate somewhat lower concentrations of suspended solids, the duration of hydraulic dredging would be dramatically longer. This would result in aquatic organisms experiencing impacts from dredging for a longer period of time. Finally, due to safety concerns for divers, hand-held dredging is considered the last choice among dredging technologies and is normally only used where conditions prevent other types of dredging (e.g., under piers).

It should be noted that the Norfolk CSO hotspot cleanup addressed only 60 cy of contaminated sediments. Because the volume was small, it was possible to contain the slurry in a relatively small upland area, and the cleanup could be completed in a few days. In contrast, the T-117 cleanup would require a much larger upland dewatering facility and much more time if hand-held hydraulic dredging were used. Technologies appropriate for the larger volume at T-117 are being proposed in the EE/CA.

Proposed Cleanup Boundary

21. Comment: Based on existing data, a very slight extension of the proposed cleanup in-water boundary would succeed in capturing most if not all of the known remaining PCB concentrations exceeding the Washington State Sediment Management Standard of 12 mg/kg-OC. Average concentrations should not be

used to make this determination. Rather, any exceedance of 12 mg/kg-OC PCBs is harmful to the benthic community or organisms that live in the mud.

Response: *The proposed cleanup boundary is protective of both human health and the benthic environment. PCB concentrations outside the proposed boundary are similar to concentrations along the rest of the waterway and will be evaluated in the Lower Duwamish Waterway RI/FS. Although an average PCB concentration that would remain outside the boundary was discussed in the EE/CA, it was not used as the basis for setting the cleanup boundary. Rather, the boundary was set based on cleaning up the highest concentrations of PCBs in the sediments in the vicinity of T-117. If these areas outside the T-117 cleanup boundary are found to have unacceptable risk at the end of the remedial or waterway-wide investigation, then they will be identified for cleanup in the feasibility study and/or cleanup decision for the entire waterway.*

Treatment and Disposal

22. Comment: The Draft EE/CA dismisses treatment as a viable option for T-117 sediments. Contamination should not be moved somewhere else. Technical experts and some of the community recommend treatment of the T-117 bank soils and sediments with an enhanced soil washing/treatment technology developed by BioGenesis. If it is dismissed, additional detail should be provided as to why this alternative is not viable. Additionally, a more detailed and open discussion of the reuse of treated materials as fill within the aquatic environment must be provided. Most polluted materials need to be destroyed or disposed of off site before clean material is deposited. Other technologies such as ultra violet (UV) and bioremediation should also be evaluated. Pros and cons of treatment need to be discussed.

Response: *EPA does not believe treatment is appropriate for the early action at T-117, nor is it cost-effective or necessary to protect the environment and human health. The proposed alternative employing upland landfill disposal, will be protective of human health and the environment. However, EPA does agree that additional details regarding effectiveness, implementability, and cost of treatment need to be provided in the EE/CA. A brief discussion of the pros and cons of treatment will be included. The importance of considering the beneficial reuse of treated materials will also be discussed in the EE/CA.*

As described in the EE/CA, the draft Candidate Technologies Memorandum (CTM) identified several treatment technologies deemed to have potential applicability for site-wide cleanup in the LDW (Retec 2005). The EE/CA focuses on those technologies deemed potentially applicable, and the reader is referenced to the CTM for discussions of other technologies. Bioremediation is not considered proven or effective for PCBs in sediments: there are no proven and effective biological techniques for treating PCBs full-scale, and no reports in the literature of PCB-contaminated sediments biotreated ex situ (outside the original

location). Ultraviolet (UV) treatment (often combined with hydrogen peroxide) is applicable to wastewater but is not applicable to contaminated sediments.

Soil washing technologies (including the BioGenesis system) are not considered appropriate for the T-117 removal action. Most soil washing processes cannot destroy PCBs or other contaminants, and merely transfer them to other waste streams. Direct landfilling of the contaminated sediment is more protective than managing the contaminants in the various waste streams. The BioGenesis System can destroy some organic contaminants, but it has not been implemented in a full-scale operation at other sediment sites. Therefore operational information, which could be used to evaluate the suitability of this technology for T-117 EAA conditions, does not exist. In addition, none of the completed pilot tests of this treatment technology have treated the concentrations of PCBs that exist at T-117, or measured how much of the PCBs were actually destroyed. Residual risks associated with the treated soils and the various waste streams from this process have not been evaluated. At this time, EPA cannot determine the effectiveness of the Biogenesis or similar processes for the T-117 soils/sediments.

EPA is further concerned about the implementability of treatment. A detailed pilot study to further investigate the use of soil washing technologies on the T-117 soils and sediments would delay the cleanup for at least one year. Similarly, designing and establishing a treatment facility with the necessary land and infrastructure would be extremely difficult and would also be likely to delay cleanup. The implementability of beneficial reuse of treated material is also a concern, and it is possible that any treated material would ultimately be sent for disposal in a landfill.

Finally, treatment at T-117 would not be cost-effective. The costs of treatment would be substantial and disproportionate to any benefits gained. As currently proposed, landfilling the material would be protective of human health and the environment at a substantially lower cost relative to treatment. Landfilling the material in a permitted facility without treatment is protective of human health and the environment. EPA will ensure that the selected landfill meets all federal, state regulations and is acceptable under EPA's Off-Site Disposal of CERCLA Waste rule. The purpose of the Off-Site Rule (40 CFR 300.440) is to avoid having CERCLA waste contribute to present or future environmental problems by directing these waste to management units determined to be environmentally sound.

23. Comment: Transport of toxic materials through the community should be addressed and the potential effects on the adjacent areas should be fully and clearly explained in design documents. EPA's perspective and knowledge regarding treatment and transport, combined with landfill disposal, should receive more thorough discussion.

Response: EPA agrees. A transportation safety plan will be developed as part of the design documents and presented to the public for their input. This plan will

include hours of operation, truck traffic routes, truck liners, vehicle decontamination procedures prior to departure, and material staging areas.

24. Comment: Transport to the Roosevelt Regional Landfill by the Regional Disposal Company requires handling dredged material at a barge-to-rail loading facility, but the company does not currently have such a facility in proximity to the Duwamish.

Response: *EPA agrees that it is critical that an appropriate barge-to-rail facility be timely identified. This facility will be identified during the removal design process and shared with all interested parties.*

25. Comment: The majority of upland excavated material would be transported by truck to a regional disposal company transfer facility, but the EE/CA does not mention where this facility is located. The community is reluctant to support a plan that would route this waste into or through other communities over their objections.

Response: *EPA recognizes the community's concern with regards to the increased truck traffic that would occur during the bank cleanup at T-117. EPA will coordinate with the community and address their concern upon completion of the transportation and safety documents. In addition, EPA will respond to questions or concerns from anyone from communities along the transportation routes as well as communities at the final destination.*

26. Comment: The EE/CA should provide a description of how excavated wastes will be transported by water and overland to minimize risks and impacts to the river and the surrounding community. The EE/CA needs to present a transportation and safety plan. The description should include information regarding hours of operation, number of trucks and barges hauling contaminated sediment through the neighborhood and along the river, anticipated routes, containment plans for soils and sediments being transported, spill response plans, etc.

Response: *The EPA agrees that a plan documenting how excavated wastes will be managed and disposed of and a transportation and safety plan are critical elements to the cleanup and that these plans should be shared with the public. The EE/CA will note that transportation and safety plans will be developed prior to the start of the cleanup and will include information regarding relevant topics such as operation hours, number of trucks and barges hauling contaminated sediment through the neighborhood and along the river, anticipated routes, containment plans for soils and sediments being transported, spill response plans, etc. These transportation and safety plans will be produced after selection of the cleanup contractor in the removal action work plans. EPA will share these plans with the affected community and provide opportunity for their input, prior to construction.*

27. Comment: It's sad that the dredged sediment is going to the poorest community in Washington State.

Response: *The landfill is in compliance with WA State regulations. Landfill disposal will be protective of human health and the environment.*

Site Characterization

28. Comment: The streamlined risk assessment is cursory.

Response: *EPA believes that the risk assessment is in accordance with EPA guidance for EE/CAs and is sufficient for the proposed action. A complete Baseline Risk Assessment is being completed for the overall LDW Site prior to a final remedial decision for the LDW Site.*

29. Comment: What were the other contaminants of concern at T-117? Although PCBs are the risk driver, what other chemicals of concern were detected above the screening concentrations protective of net fishing or beach play activities derived as part of the Phase I human health risk assessment for the LDW Superfund cleanup process? These should be presented in this the EE/CA.

While it may be intuitive that other contaminants will be removed and capped along with PCBs, it should be stated in the document that multiple contaminants are being addressed through this action, with PCBs being the primary contaminant of concern.

Response: *The EE/CA discusses other chemicals that were analyzed for and found in soil and sediment. PAHs were found above the SMS CSL in only two sediment and two soil samples and these samples were co-located with PCB contamination. (See tables 2-4 and 2-7 of the EE/CA). Given the limited number of PAH hits, EPA has not identified PAHs as a “contaminant of concern.” The sampling results demonstrate that PCBs are the risk driver at the EAA and that sufficient information has been presented in the EE/CA. PAH contamination in soils will be removed along with PCBs. Post excavation sampling will also analyze for the presence of PAHs.*

30. Comment: Paragraph 2 under “Exposure pathways” has no mention of exposure pathways for humans; please add “and humans” to the 2nd sentence.

Response: *The second sentence of this section does mention human exposures.*

31. Comment: Several PCB cleanups over the last 10 years have been poorly characterized by core sampling. The size of the ultimate cleanup area ended up being several times larger than test drills predicted and led to large cost overruns. Also as a result of the understatement of the scale of the removal and the

necessity to come up with more money, the job was incomplete, with the likelihood of future contamination or leakage.

Finally, the wildlife interaction and effects of the broader food web need to be considered more openly and aggressively. The long-term rehabilitation of the soils and waters is the most important component of any project. A quick fix to cap a toxic mess merely pushes the burden of cleanup onto another generation. Containment may be necessary but a large component of the rehabilitation of the EAA should involve planting of native plants for the protection of the entire area.

Response: *EPA agrees that adequate characterization is critical in conducting a protective cleanup. More PCB soil borings are being done to adequately define the T-117 EAA and the scale of the upland removal may increase depending on the results. Effects on the broader food-web will not be evaluated as part of this early action cleanup; however, EPA expects that the cleanup will provide substantial benefit to the food chain in the Duwamish Waterway and this effect will be evaluated as part of the overall LDW Investigation. Coordination with the appropriate agencies (NOAA, WDFW) will occur before any habitat rehabilitation is proposed or approved by EPA.*

32. Comment: The present uses of the waterway include tribal fishing that is carried out at least seasonally on the lower parts of the Waterway. The EE/CA also makes little to no mention of any one of several small parks, including several in or close to South Park.

Response: *The EE/CA currently presents these uses in Sections 2.2.1 and 2.2.2. EPA believes the descriptions are sufficient for the purposes of the EE/CA.*

33. Comment: The text needs more support before concluding that the benthic fauna or bottom dwelling sediment organisms are likely to be more like those in the turning basin than those off Kellogg Island solely on the basis of a highly generalized salinity difference. The text of the EE/CA must give some indication of the salinity at T-117 and the salinity below which species decline.

Response: *The EE/CA currently describes the differences between T-117 and Kellogg Island based on data collected as part of the Lower Duwamish Waterway RI. A summary of the types of benthic infauna encountered at T-117 during this field effort are presented in Section 2.3.2.2 of the EE/CA. The current description of the ecology at T-117 is sufficient for the purposes of the EE/CA. Benthic infauna community sampling was done as part of the RI, although samples were not taken at T-117. More information about the composition of the benthic community at LDW can be found in the Lower Duwamish Waterway Groups Data Report: Taxonomic Identifications of Benthic Invertebrate Communities, May 24, 2005.*

34. Comment: If the recently collected clam, fish and crab tissue data come back with higher PCB and metals levels than expected, will the plan change to remove all of the contaminated sediments and upland soils?

Response: *EPA does not anticipate that the tissue results from the RI sampling will impact the clean up action at T-117. The proposed action will be protective of aquatic species within this boundary by reducing PCB levels in surficial sediment. The tissue data will be used to assess overall risks to LDW and what cleanup may be needed beyond the early actions, but this assessment will not be completed until 2006, and would not be used to reassess the boundaries of the early action cleanups.*

35. Comment: The marine and other aquatic mammals are incredibly sensitive to PCBs, owing in large part to the biological differences among animals. One species, the Mustelidae are the most sensitive mammals and no doubt their high metabolism and lability of the thermogenerative capacity is part of their sensitivity.

Response: *Comment noted.*

36. Comment: Are there any state-listed threatened and endangered species that should be included in the species list presented in this report?

Response: *Both federal and state listed species will be included in the EE/CA.*

37. Comment: Either existing tri-butyl tin (TBT) results should be included, or there has been insufficient sampling for TBT and the EE/CA should obtain more information on TBT and total organotin.

Response: *EPA believes that sufficient information for TBT exists in the EE/CA. Sampling for TBT was done as part of filling in data gaps and EAA characterization. There is discussion of TBT results in the sediment chemistry section.*

Contracting

38. Comment: Construction should be considered using performance-based bids and stringent construction observation, so that the cleanup will be done this one time and more cleanup does not have to occur again.

Response: *Performance based bids will be considered. EPA will ensure that the clean up action objectives and stringent performance standards are clearly articulated in the design documents.*

Monitoring

39. Comment: The design documents should detail the monitoring requirements and procedures that will happen before and after cleanup.

Response: *EPA agrees. Performance monitoring plans will be developed during design and these plans will be shared with the public. The plans will address monitoring during and after cleanup. Additionally, EPA will assess the performance of the bank cap no less frequently than every five years, for as long as hazardous substances remain on site at concentrations of concern.*

Cleanup Schedule

40. Comment: The process to get to cleanup has taken a long time. Cleanup should occur as soon as possible.

Response: *EPA agrees. The cleanup process required multiple sampling events to fully characterize the EAA, and this characterization ultimately led to the proposed alternatives in the EE/CA. EPA anticipates an accelerated schedule in which construction of this project will begin in the summer of 2006.*

Applicable Relevant and Appropriate Requirements (ARARs)

41. Comment: The following regulations/ordinances should be included as ARARs.

1) The proposed action is within designated Critical Areas requiring protection, and that have limits on the alterations that can occur without destroying their function and value. In particular, the area is a designated floodway and a Class I stream. King County Code Title 21A.24 details the regulations with which the remediation should be consistent.

2) The proposed action is within the Shoreline Management Zone and will need to be consistent with requirements of the King County Shoreline Master Plan. King County Code Title 25 details these regulations.

Response: *According to CERCLA, ARARs are limited to requirements in state or federal environmental and facility siting laws and regulations, and not local government requirements. County or City ordinances are considered ARARs however when they contain requirements that are specifically mandated by federal or state law. The Washington state Shoreline Management Act (SMA) requires local governments to develop Shoreline Master Plans for their shoreline zones. The Act mandates many requirements and each local government plan must be approved by the State. For these reasons, EPA has consistently treated local government ordinances like King County Code Title 25 which implement the SMA as ARARs. The Critical Areas ordinances in King County Code Title 21A.24.*

do not contain mandated state requirements. They will be addressed as regulations To Be Considered (TBCs) for CERCLA purposes. State law (the Growth Management Act) requires local governments to develop regulations to protect critical areas, but the content of these regulations is left to local government discretion, and these ordinances are not subject to state approval. Based on these differences, EPA does not treat them as the equivalent of state requirements. Lastly, only local government floodplain requirements that are specifically required by the National Floodplain Insurance Program, a federal law, are treated as ARARs.